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ABSTRACT

An apparatus and method for generating a wavelength-tunable short pulse that can generate wavelength-tunable short pulsed light in the visible-light wavelength band are provided. When ultrashort pulsed light is introduced into an optical fiber (3), a wavelength-tunable ultrashort soliton pulse is generated by a nonlinear optical effect through the soliton effect and Raman scattering. When the soliton pulse has a short duration and high peak intensity, a third harmonic having one-third of the wavelength of the soliton pulsed light is generated by a third nonlinear optical effect. This third harmonic has a short wavelength in the visible light band.